A3

10. (Amended) The double-resonance-absorption microscope according to claim 8, further comprising beam area limitation means for extracting only an area having the beam distortion in the beam plane less than $\lambda_2/2$ from the erase light by the coherent light source, wherein the erase light is made to have the phase distortion in the beam plane less than $\lambda_2/2$ by the beam area limitation means.

A4

15. (Amended) The double-resonance-absorption microscope according to claim 11, wherein the phase modulation element comprises a parallel substrate which is optical flat to the erase light and an optical thin film, evaporated on the parallel substrate, which has a prescribed thickness distribution.

16. (Amended) The double-resonance-absorption microscope according to claim 11, wherein the phase modulation element comprises a parallel substrate which is optical flat to the erase light and also is performed a etching.

17. (Amended) The double-resonance-absorption microscope according to claim 8, further comprising fluorescence detection means having a photoelectron conversion plane, a microchannel plate, a phosphor screen, an optical fiber coupler, and a CCD detector.

A5

19. (Amended) The double-resonance-absorption microscope according to claim 17, further comprising a slit or a pinhole on an optical axis between a sample plane and the fluorescence detection means.

A6

21. (Amended) The double-resonance-absorption microscope according to claim 17, further comprising time control means for controlling the time to apply a voltage to an electrode of each of the photoelectron converter, the microchannel plate and the phosphor screen.

24. (Amended) The double-resonance-absorption microscope according to claim 8, further comprising a light separation element or a wavelength dispersion element which removes either or both of the pump light and the erase light from a fluorescence signal.

A7

25. (Amended) The double-resonance-absorption microscope according to claim 6, wherein a pulse width of the erase light is longer than that of the pump light and also an irradiating time of the pump light completely overlaps with that of the erase light.

31. (Amended) The double-resonance-absorption microscope according to claim 8, wherein there is used a standard sample having a substrate transparent to the pump light and the erase light and a molecule uniformly applied to the substrate, capable of being excited by either of the pump light and the erase light, and wherein optical axes of the pump light and the erase light are controlled so that an area and a luminance of a light emission becomes minimum and maximum, respectively, said light emission occurs from the molecule when the pump light and the erase light are simultaneously applied to the standard sample.

A8

32. (Amended) The double-resonance-absorption microscope according to claim 8, further comprising a mechanism for scanning the pump light and the erase light or scanning the sample at least with a nanometer order.

40. (Amended) The solid dye laser according to claim 35, wherein a pulse laser beam by the short pulse laser has a pulse width of less than 10 nsec.

A9

41. (Amended) The solid dye laser according to claim 35, being capable to exchange the solid laser medium without changing an optical system.

42. (Amended) The solid dye laser according to claim 35, further comprising an optical grating for controlling a laser oscillation wavelength.

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44. (Amended) The double-resonance-absorption microscope according to claim 1, wherein a solid dye laser is provided as either or both of the light source for the pump light and the light source for the erase light, said solid dye laser comprising:

a solid laser medium where a dye molecule having at least more than two quantum levels is dispersed; and

a short pulse laser which excites the solid laser medium.

A11

48. (Amended) The double-resonance-absorption microscope according to claim 45, wherein a photon energy range of a light emission from the sample molecule in the first electronic excited state and a excitation energy range which excites the sample molecule to the second electronic excited state from the first electronic excited state overlap with each other.

49. (Amended) The double-resonance-absorption microscope according to claim 45, further comprising overlap means for partially overlapping irradiating areas of the pump light and the erase light with each other, wherein an emission area upon deexcitation of the sample molecule to the ground state from the first electronic excited state is partially inhibited by irradiating the pump light and the erase light through the overlap means.

50. (Amended) The double-resonance-absorption microscope according to claim 45, wherein a sample is dyed with a fluorescence labeler molecule having at least three electronic state including a ground state and the sample molecule is the fluorescence labeler molecule.

A12

55. (Amended) The double-resonance-absorption microscope according to claim 51, further comprising means for adjusting a polarization state or a wavelength or a strength of the pump light and the erase light.

56. (Amended) The double-resonance-absorption microscope according to claim 51 wherein the sample molecule to be excited is a cation.

Kindly add new claims 62-73 as follows.

62. (New) The double-resonance-absorption microscope according to claim 8, wherein a pulse width of the erase light is longer than that of the pump light and also an irradiating time of the pump light completely overlaps with that of the erase light.

63. (New) The double-resonance-absorption microscope according to claim 8, wherein a solid dye laser is provided as either or both of the light source for the pump light and the light source for the erase light, said solid dye laser comprising:

a solid laser medium where a dye molecule having at least more than two quantum levels is dispersed; and

a short pulse laser which excites the solid laser medium.

64. (New) The double-resonance-absorption microscope according to claim 46, wherein a photon energy range of a light emission from the sample molecule in the first electronic excited state and a excitation energy range which excites the sample molecule to the second electronic excited state from the first electronic excited state overlap with each other.

65. (New) The double-resonance-absorption microscope according to claim 47, wherein a photon energy range of a light emission from the sample molecule in the first electronic excited state and a excitation energy range which excites the sample molecule to the second electronic excited state from the first electronic excited state overlap with each other.

66. (New) The double-resonance-absorption microscope according to claim 46, further comprising overlap means for partially overlapping irradiating areas of the pump light and the erase light with each other, wherein an emission area upon deexcitation of the sample molecule to the ground state from the first electronic excited state is partially inhibited by irradiating the pump light and the erase light through the overlap means.

67. (New) The double-resonance-absorption microscope according to claim 47, further comprising overlap means for partially overlapping irradiating areas of the pump light and the erase light with each other, wherein an emission area upon deexcitation of the sample molecule to the ground state from the first electronic excited state is partially inhibited by irradiating the pump light and the erase light through the overlap means.

68. (New) The double-resonance-absorption microscope according to claim 46, wherein a sample is dyed with a fluorescence labeler molecule having at least three electronic state including a ground state and the sample molecule is the fluorescence labeler molecule.

A13 concld

69. (New) The double-resonance-absorption microscope according to claim 47, wherein a sample is dyed with a fluorescence labeler molecule having at least three electronic state including a ground state and the sample molecule is the fluorescence labeler molecule.

70. (New) The double-resonance-absorption microscope according to claim 52, further comprising means for adjusting a polarization state or a wavelength or a strength of the pump light and the erase light.

71. (New) The double-resonance-absorption microscope according to claim 53, further comprising means for adjusting a polarization state or a wavelength or a strength of the pump light and the erase light.

72. (New) The double-resonance-absorption microscope according to claim 52 wherein the sample molecule to be excited is a cation.

73. (New) The double-resonance-absorption microscope according to claim 53 wherein the sample molecule to be excited is a cation.